Specifications XFPN-050KPG-T1

Model (XFPN-)	050KPG-T1	Units	Remarks
Recommended operating conditions			
Rated Pressure	5 34.5	psi kPa	
Measuring pressure range	0 to 5	psi	
Pressure type	Gauge pressure		
Pressure media	Non-corrosive gas		
Supply voltage (constant voltage)	5 +/- 0.25	VDC	
Absolute maximum rating			
Maximum load pressure	Twice rated pressure		
Maximum input voltage	12	VDC	
Compensated temperature range	-20 to 65	degree C	
Operating temperature	-40 to 85	degree C	
Storage temperature	-40 to 125	degree C	
Electrical performance/characteristics (Supply voltage VCC=5.0V constant voltage, Ambient temperature Ta=25 degree C)			
Current consumption	max. 10	mA	
Output impedance	10 or less	Ohm	
Source current	0.01 or less	mA	
Sink current	1 or less	mA	
Output span voltage	4.0	V	
Offset voltage	0.5 +/- 0.1	V	*1
Full scale voltage	4.5 +/- 0.1	V	*1
Total accuracy	+/- 0.2	V	*2

*1 Error due to supply voltage variations is excluded.
*2 Accuracy includes: non-linearity, temperature errors in compensated temperature range, pressure hysteresis and calibration errors (span and offset).

1. General;

This document details the performance specifications of FUJIKURA's XFPN-050KPG-T1, high level output, on-chip signal conditioned, temperature compensated and calibrated pressure transducers.

2. Principle;

FUJIKURA's integrated semiconductor pressure sensor has four pressure sensitive piezoresistors which are formed on the diaphragm surface of a silicon chip. This chip includes a constant current drive circuit, signal amplification circuitry and resistors for calibration of offset and sensitivity and temperature compensation. These are achieved using silicon planer technique.

When the applied pressure deforms the diaphragm, the piezoresistors change their resistance due to the piezoresistance effect. The resistance change of the four resisters, which constitute a whetstone bridge circuit, results in a pressure proportional voltage because there is an internally supplied constant current excitation. The surrounding circuit then amplifies the low-level voltage to provide a linear, repeatable high-level output voltage.

3. Pressure range & rating;

Model	Rated (Measureable) pressure range
XFPN-050KPG-T1	0 ~ +5.0 psi·Gauge

4. Package outline dimensions, Electrical pin connections, Marking and Weight;

Refer the attached drawings.

The following table shows the drawing No.

Model	Package outline dimensions	Electrical pin connections	Marking
XFPN-050KPG-T1	No.9-750-044	No.9-751-048	No.9-750-046

Weight	approximately 1.2g

5. Absolute maximum rating;

Item	Symbol	Rating	Unit
Maximum load pressure	Pmax+	15	psi
Maximum input voltage	Vccmax	12	VDC
Compensated temperature range	Topt1	-20 ~ 65	℃
Operating temperature range	Topt2	-40 ~ 85	℃
Storage temperature range	Tstg	-40 ~ 125	℃
Insulation durability	—	AC500V, 1minute.	
Insulation impedance	—	100MΩ min. (DC500V)	

6. Recommended operating conditions;

Item	Symbol	Condition	Unit
Rated pressure	Popt	5	psi
Type of pressure	—	Gauge	
Pressure media	—	Non-corrosive gases	
Supply Voltage (const.)	Vcc	5.0±0.25	VDC

7. Electrical characteristics;

(Vcc=5VDC constant, ambient temperature Ta =25 ℃)

Item	Symbol	Rating	Note
Power consumption	Icc	10 mA max.	
Output impedance	Imp	10 Ω max.	
Source current	Isource	0.01 mA max.	
Sink current	Isink	1 mA max.	
Offset voltage	Voff	0.5±0.1 V	※1
Output voltage at full scale	Vfs	4.5±0.1 V	※1
Output span voltage	SV	4.0 V	
Accuracy	Error	±0.2 V	※1,2
Response time	Tr	1 ms. typ.	※3

Notes; ※1) The error excludes the ratio metric effect of changes in input voltage.
The output of XFPM sensors is ratio metric within this specified excitation range of 4.75 to 5.25 volts.
See transfer function as follows.

※2) Accuracy consists of the following: Non-linearity, temperature errors over the temperature range -20 to 65℃, pressure hysteresis and calibration error (sensitivity and offset).

※3) Response time is defined as the time for the change in output voltage from 10% to 90% of its final value when the input pressure make a step change.

8. Transfer Function;

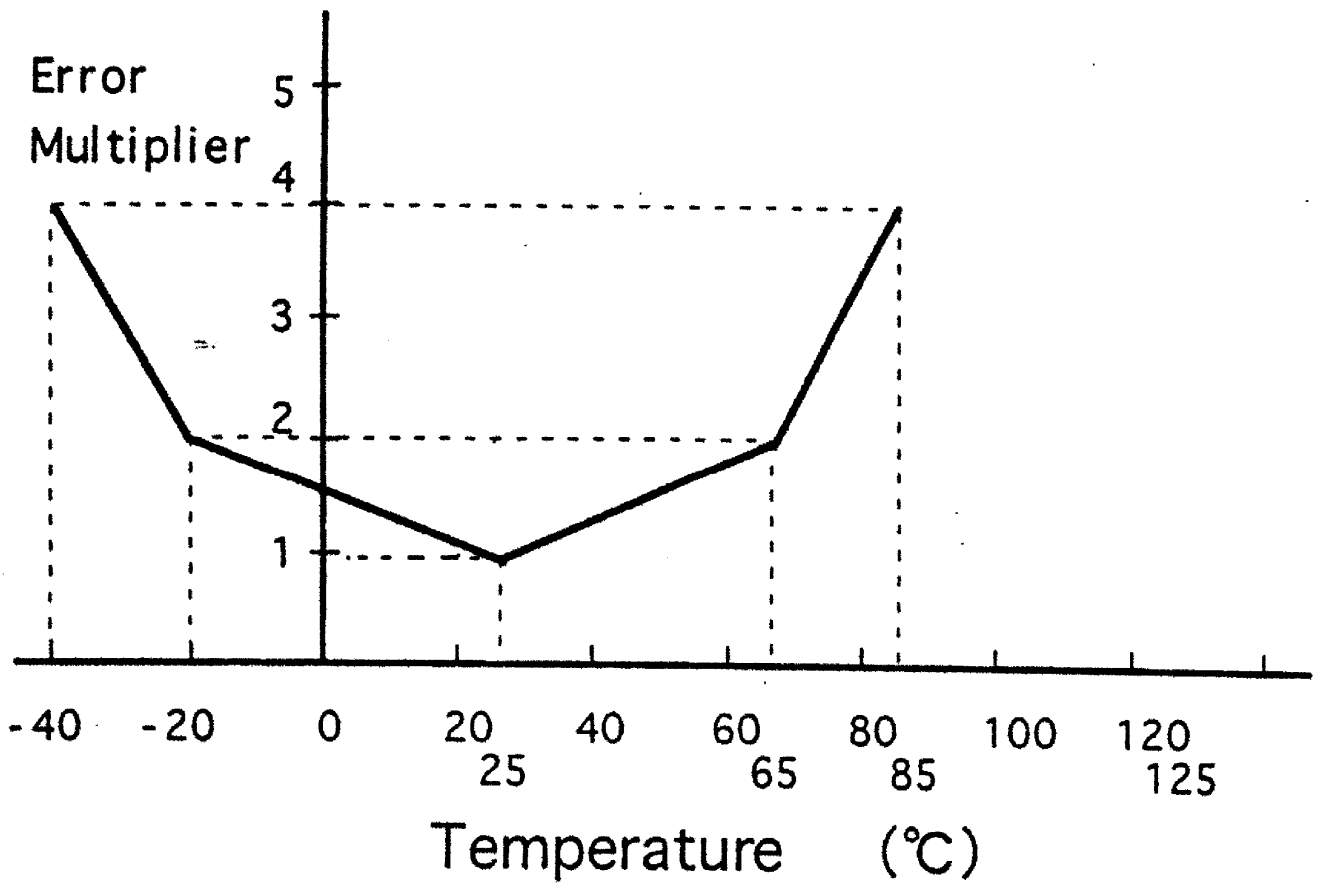
Vout = Vs × ((P × α) + β) ± (Pressure Error × Temperature Error Multiplier × α × Vs)

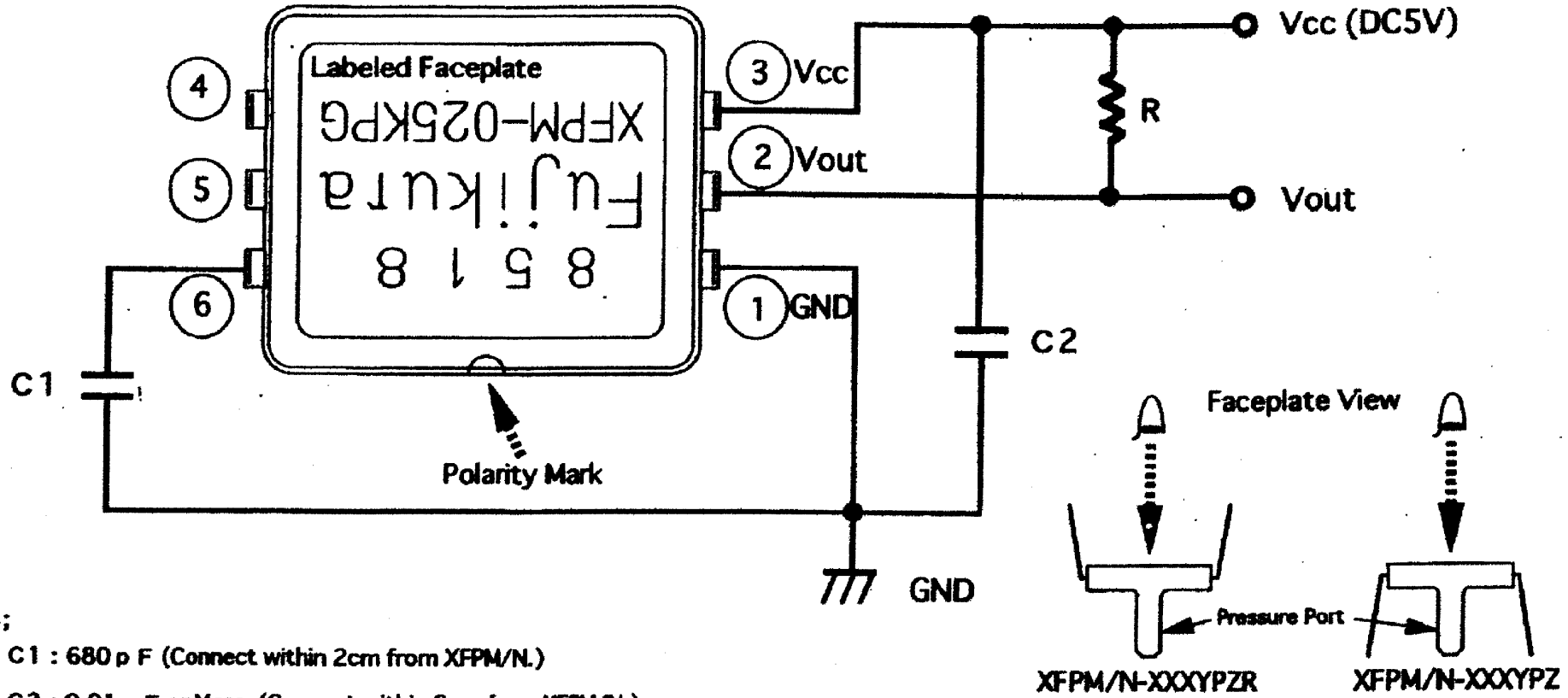
Vs = 5.0 ± 5% (V) : The output voltage (Vout) changes linearly with the power supply voltage Vs given 4.75V ≤ Vs ≤ 5.25V.

P = Input Pressure (psi)

Model	Pressure Range	α	β	Pressure Error
XFPN-050KPG-T1	0-5psi	0.16	0.1	0.125psi

Temperature Error Multiplier





Notes;

1) C1 : 680 p F (Connect within 2cm from XFPM/N.)

2) C2 : 0.01 μ F or More (Connect within 2cm from XFPM/N.)

3) R : 3.9 k Ω

4) Do not connect anything with No.4 and No.5 pin and do not connect each other.

PART NO.	NAME OF PARTS	MAT'L	QTY	REMARKS

PROJECT NAME:

APPROVED BY: T.Takizawa
CHECKED BY:
DESIGNED BY:
DRAWN BY: R.Nagano

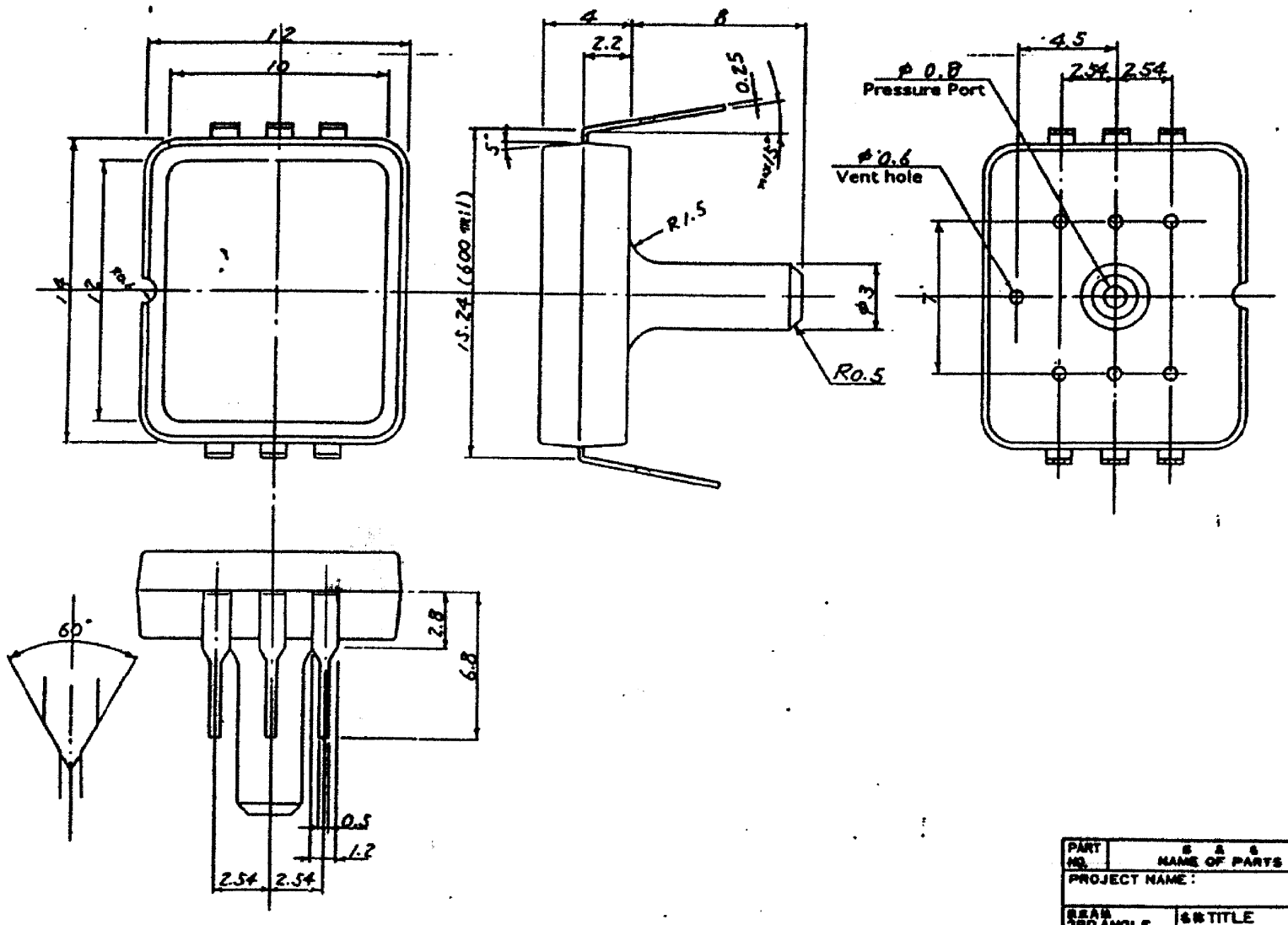
UNITS: mm
FOR SCALE:
DATE OF ISSUE: 1996/3/7
DATE OF REVISION:

TITLE: XFPM/N (Gauge) Connection Diagram

DRAWING NO.: 9-751-048

MARK	REVISIONS	DATE	BY

フジクラ Fujikura Ltd.



PART NO.	NAME OF PARTS	MAT'L	QTY.	REMARKS
PROJECT NAME:				

第三角法 3RD ANGLE PROJECTION	TITLE: XFPN-×××YPZ (Gauge Pressure Type) Package Outline Dimensions
UNITS: mm(inch)	
SCALE:	
DATE OF ISSUE: 1996.3.7	DRAWING NO.: 9-750-044
DATE OF DESIGN:	REV.MARK:

REVISIONS	DATE	BY

Fujikura Ltd. Tokyo, Japan

APPROVED BY	CHECKED BY	DESIGNED BY	DRAWN BY
浜沢	永野		加藤